

Application No. 10/016,597
Filed: October 26, 2001
TC Art Unit: 2192
Confirmation No.: 6523

REMARKS

In response to an Office Action mailed on August 5, 2005, Applicant respectfully requests that the above-listed Amendments be entered and the Application be reconsidered. With entry of the above-listed Amendments, claims 1, 10, 18, 19, 20, 33, 34, 36 and 37 are amended.

The Examiner objected to claims 20 and 33 due to various informalities. These claims have been amended to correct typographical errors to overcome these objections.

The Examiner rejected claims 34, 36 and 37 under 35 U.S.C. §112, second paragraph, as being indefinite. These claims have been amended to correct typographical errors to overcome these rejections.

The Examiner rejected claims 1-17, 19-21, 24-34 and 37 under 35 U.S.C. §102(e) as being anticipated by US Pat. App. No. 2003/0126195 by Reynolds, *et al.* ("Reynolds"). In response to Applicant's arguments in the second paragraph of p. 11 of the previous Amendment, the Examiner maintained the assertion (from the previous Office Action) that Reynolds discloses "monitoring program code, asynchronous with respect to said control program code, for generating at least one event indication response to a change of at least one predetermined attribute associated with said embedded device..." (Emphasis added.) Although, as noted by the Examiner, Reynolds discloses allowing a network administrator to choose certain boards on which to upgrade applications, the mode of upgrade (i.e., entire chassis, board-by-board, which board(s), etc.) is determined based on an upgrade instruction file stored in a sub-directory 1220 (paragraph [0505]), not based on an attribute of an embedded device. In other words, in Reynolds, the determination is made based on an external input, not based on an observable attribute of the embedded device itself or an attribute that reflects a status or a condition of the device, such as a number of bytes received by the embedded device. Furthermore, Reynolds does not disclose generating the event in response to a change in such a device attribute.

Claim 1 has been amended to recite, "monitoring program code ... for generating at least one event indication in response to a change of at least one predetermined attribute ~~associated with~~ of said embedded device." Monitoring program code that operates as recited provides an advantage over the prior art. For example, control program code that issues a command to replace a code

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image can stop the code replacement, restart the code replacement or retry the code replacement, if, for example, the number of bytes transferred is not equal to the number of bytes expected to be transferred after a predetermined amount of time or the transfer appears to have failed for some other reason. Reynolds and the other art of record, alone or in combination, does not disclose or suggest generating an event in response to a change of an attribute of an embedded device, as recited in amended claim 1. For at least this reason, claim 1 is believed to be allowable over Reynolds.

Independent claims 10, 18 and 19 have been similarly amended, and these claims are believed to be allowable, for at least the reasons given above with respect to claim 1.

Claims 2-9 and 11-17 depend directly or indirectly from claim 1 or claim 10. These dependent claims are, therefore, believed to be allowable, for at least the reasons given above with respect to claim 1.

In response to Applicant's arguments in the second paragraph of p. 12 of the previous Amendment, the Examiner asserted that Reynolds discloses, for example in paragraph [0504], "a monitor program operative, asynchronously with respect to said control program, to monitor progress of replacing said code image in said embedded device..." (emphasis added), as recited in claim 20. The Applicant respectfully submits that this assertion is not supported by the Reynolds reference. Applicant will address "synchronously" and "monitor progress" separately.

Reynolds does not disclose monitoring progress of replacing a code image. In paragraph [0504], Reynolds describes a master SMS 184 polling an installation directory 1222 to discover if and when a new sub-directory is created. The new sub-directory is created by a JAVA application, which downloads an Installation Kit into the new sub-directory. (Paragraph [0499].) When the SMS 184 detects the new sub-directory, the SMS opens a packaging list, verifies that each software component listed in the package is stored in the new sub-directory, decompresses the package list (if necessary) and performs a checksum on the software components. (Paragraph [0504].) Thus, the SMS 184 can be said to monitor the installation directory 1222 for the existence of the new sub-directory.

However, monitoring the installation directory 1222 is not the same as, or equivalent to, monitoring progress of replacing a code image. The creation or existence of the installation

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directory 1222 does not indicate progress of replacing a code image. For example, creation or existence of the installation directory 1222 does not indicate a number of bytes received by an embedded device, completion of the code image replacement or any other progress of replacing the code image. Instead, creation of the installation directory 1222 merely indicates that an Installation Kit is available. The existence of the Installation Kit does not indicate, for example, whether none, some or all of the software has been installed on the device. The Installation Kit exists in the installation directory 1222 before, during and after Reynolds' software installation. Thus, the availability of the Installation Kit does not indicate progress in replacing a code image.

In fact, the activities described in the cited paragraph [0504] occur before the network administrator makes a selection, thus before any software begins to be installed on a device. Consequently, these activities cannot be said to disclose monitoring progress of replacing software on a device. Once all the software is verified, the SMS 184 opens an upgrade instruction file, which is part of the Installation Kit. (Paragraph [0505].) The SMS 184 creates a record 1227 in an SMS table 192. (Paragraph [0507].) The SMS 184 sends a trap to a NMS (or the NMS polls the SMS table). (Paragraph [0508].) Eventually, the NMS causes an Available Release window 1232 to be displayed to an administrator. (Paragraph [0508].) Only after the administrator makes a selection in the Available Release window 1232 can the new software be installed. (Paragraph [0511], *et seq.*) Thus, Reynolds does not disclose or suggest monitoring progress of replacing a code image. For at least this reason, claim 20 is believed to be allowable.

Furthermore, claim 20 calls for "a system ... comprising a control program ... and a monitor program operative, asynchronously with respect to said control program, to monitor progress of replacing said code image..." (Emphasis added.) A system according to the claim includes a monitor program and a control program. The control program is operative to replace a code image in an embedded device. The monitor program is operative to monitor progress of replacing the code image. The monitor program operates asynchronously to the control program. For example, as shown in Fig. 5 of the Application, a control thread 100 sends a device command 108 to a network device abstraction 104, which communicates with an actual device 106. The network device abstraction 104 responds to the control thread 100 with a device command result event 114. Asynchronously, i.e., not synchronized with the control thread 100, a monitor thread 102 sends a

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monitor command 116 to the network device abstraction 104, and the monitor thread sends a monitor result event 123 to the control thread 100.

Thus, the monitor thread 102 can ascertain the progress of the code image replacement. For example, the monitor thread 102 can ascertain the number of bytes received by the device, or the monitor thread 102 can detect a failure of the code image replacement. The monitor thread 102 can perform these monitoring functions without being synchronized with the control thread 100. In other words, the monitor thread 102 can ascertain the progress of the code image replacement at any time during (or after) the replacement process, and the monitor thread can notify the control thread 102 of the progress (or lack thereof) while the control thread replaces the code image.

The disclosed and claimed invention provides advantages over the prior art. For example, the monitor program can periodically or occasionally report to the control program the number of bytes received by the embedded device. Based on this information, the control program can restart the code replacement if, for example, the first code replacement stalls.

The Examiner asserted that Reynolds paragraphs [0119] and [0127] disclose "standard SNMP traps enabling asynchronous notification of problems to both client and server." The Applicant respectfully notes that claim 20 does not recite asynchronous notification of problems to a client and to a server. Furthermore, Reynolds' master SMS (which the Examiner apparently analogizes to the recited monitoring program) and Reynolds' NMS (which the Examiner apparently analogizes to the recited control program) do not operate asynchronously. Instead, control passes between the SMS and the NMS in ping-pong fashion.

When the SMS 184 detects the new sub-directory, the SMS opens and verifies an Installation Kit. (Paragraphs [0504] - [0505].) The SMS 184 then sends a trap to the NMS (or the NMS polls the SMS table). (Paragraph [0508].) In response, the NMS prompts a network administrator. (*Id.*) If the network administrator provides the required information, the NMS sends an active query to the master SMS, and the master SMS sends notices to SMS clients. (Paragraph [0512].) Once all the software is upgraded, the master SMS sends a trap to the NMS (or the NMS polls a status field written by the master SMS). (Paragraph [0524].)

Thus, Reynolds does not disclose or suggest a control program operative to replace a code image and a monitor program operative, asynchronous with the control program, to monitor

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progress of replacing the code image, as recited in claim 20. For at least this reason, claim 20 is believed to be allowable over Reynolds.

Claims 1, 10, 18 and 19 recite asynchronous monitor program code and control program code or similar method steps. Thus, these claims are believed to be allowable over Reynolds, for at least the reasons given above with respect to claim 20.

Claims 2-9 and 11-17 depend directly or indirectly from claim 1 or 10. Thus, these dependent claims are believed to be allowable, for at least the reasons given with respect to claim 20.

Returning to claim 20, Reynolds also does not disclose generating an event indication to the control program to indicate a status of replacing the code image during the replacement of the code image. Reynolds' master SMS notifies the NMS only after the software is completely upgraded. (Paragraph [0524].) Interim notifications to the control program, which are made possible by the disclosed and claimed invention, provide advantages over the prior art. For example, if the number of bytes received by the device stops increasing, the replacement may have stalled, and the control program can restart the replacement process. Claim 20 has been amended to recite, "generate an event indication to said control program to indicate a status of replacing said code image after replacement of said code image has begun but before replacement of said code image is completed." Reynolds does not disclose or suggest a mechanism to detect a code replacement that has stalled or stopped before completing. For at least this reason, claim 20 is believed to be allowable.

Claims 21-32 depend directly or indirectly from claim 20. These dependent claims are, therefore, believed to be allowable, for at least the reasons given above with respect to claim 20.

Independent claim 33 includes recitations and amendments similar to those in claim 20. Thus, claim 33 is believed to be allowable, for at least the reasons given above with respect to claim 20.

Claims 34-37 depend directly or indirectly from claim 33. These dependent claims are, therefore, believed to be allowable, for at least the reasons given with respect to claim 20.

The Examiner rejected claim 18 under 35 U.S.C. 103(a) as being obvious over Reynolds in view of US Pat. No. 6,549,943 to Spring ("Spring"). The Examiner asserted that claim 18 recites a computer program product version of the system of claim 1. Claim 18 has been amended as

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discussed above and is believed to be allowable, for at least the reasons discussed above with respect to claim 1.

The Examiner rejected claims 22, 23, 35 and 36 under 35 U.S.C. §103(a) as being obvious over Reynolds in view of US Pat. App. No. 2001/0055017 by Ording ("Ording"). As noted, these claims depend directly or indirectly from claim 20 or claim 33. These dependent claims are, therefore, believed to be allowable for at least the reasons given above with respect to claims 20 and 33.

For all the foregoing reasons, it is respectfully submitted that the present Application is in a condition for allowance, and such action is respectfully solicited. The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present Application.

Respectfully submitted,

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